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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,591	09/13/2006	Dong-seok Kim	29137.096.00	1374
30827 7590 08/08/2007 MCKENNA LONG & ALDRIDGE LLP 1900 K STREET, NW WASHINGTON, DC 20006			EXAMINER LISTVOYB, GREGORY	
			ART UNIT 1711	PAPER NUMBER
			MAIL DATE 08/08/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/550,591

Applicant(s)

KIM ET AL.

Examiner

Gregory Listvoyb

Art Unit

1711

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 14 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 4-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 9/13/2006.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

***Election/Restrictions***

Applicant's election without traverse of Group I (Claims 1-3) in the reply filed on 5/14/2007 is acknowledged.

***Claim Rejections - 35 USC § 112***

Claims 1-3 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Chemical Formula of Claim 1 contains a group -COOR, which suggests that Carbon atom has a valency of II.

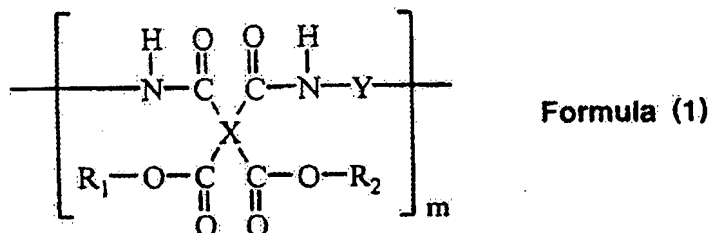
For the purpose of this rejection Examiner assumes that actual formula is - C(O)OR.

***Claim Rejections - 35 USC § 103***

Claims 1-3 rejected under 35 U.S.C. 103(a) as being unpatentable over Jung et al (US 2002/0093077) herein Jung in combination with Okada et al (US 2004/0048978) herein Okada and evidenced by Hosaka et al (US 2004/0048004) herein Hosaka.

Art Unit: 1711

Jung discloses a reactive transparent polyimide precursor having the structure of the following Formula (1) (see Claim 1):



Where

R1 and R2 are independently a Hydrogen atom, or an acid-dissociable group, which may contain an unsaturated Hydrocarbon C 1-20 (see Claim 6)

X is a tetravalent, an aromatic or an aliphatic organic group; Y is a divalent, an aromatic or an aliphatic organic group; and m is an integer equal to or greater than 1.

Regarding claim 2, Jung discloses that the ratio between Hydrogen atom and acid-dissociable group is within the broad range of 0.1-1 (see Claim 7), which gives the acid value of the precursor within the range of 30 to 200 mg KOH/g.

Jung does not teach that "X" is alicyclic tetracarboxylic acid and molecular weight of his polyimide precursor.

Art Unit: 1711

Okada discloses a reactive transparent polyimide precursor and polyamide comprising a reaction product of alicyclic tetracarboxylic acid dianhydride (1,2,3,4 cyclobutanetetracarboxylic acid dianhydride, (see line 0094)- the same compound used in the Application), aliphatic, alicyclic, or non-conjugated aromatic diamines having 3 to 30 carbon atoms and organic groups having 1 to 20 carbon atoms including one or more ethylenically unsaturated bonds (glycidyl acrylate, see line 0124, the same compound used in the Application). Okada teaches that an acid equivalent of his polymer is within the range of 200-3000 (see Claim 4 and line 0260), which overlaps with acid value of 30-200 mg KOH/g.

As evidenced by Hosaka alicyclic tetracarboxylic acid is preferred in optical applications due to its excellent transparency.

Therefore, it would have been obvious to a person of ordinary skills in the art at the time the invention was made to use alicyclic tetracarboxylic acid component in Jung's polyimide precursor to obtain film with excellent transparency.

In reference to Claim 3, Okada teaches that Molecular Weight of the polyamide precursor is within the range of 5000-1000000.

If the average molecular weight is less than 5,000, the resulting soluble polyimide will have a smaller molecular weight. Accordingly, the photosensitive resin composition including such soluble polyimide, if used as it is, is not practical because of its

Art Unit: 1711

brittleness. Conversely, if the polyamic acid has an average molecular weight of greater than 1,000,000, a varnish of the polyamic acid will have an excessively high viscosity, so that the handling thereof will be difficult. (see line 0108)

Therefore, it would have been obvious to a person of ordinary skills in the art at the time the invention was made to prepare polyimide precursor with molecular weight within the range of 5000-1000000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory Listvoyb whose telephone number is (571) 272-6105. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (571) 272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Application/Control Number: 10/550,591


Page 6

Art Unit: 1711

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregory Listvoyb  
Examiner  
Art Unit 1711

GL  
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James J. Seidleck  
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Technology Center 1700